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MX/Audix Interface User Manual: V1.4

1. Revision History

Version	Modifications	Date
1.0	Original issue. (LJA review 17/11/03)	13/10/03
1.1	Modifications	25/11/03
1.2	Modifications	21/01/04
1.3	Mods Following comments from R&D	10/02/04
1.4	Mods Following comments from R&D	11/02/04

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DISCLAIMER

This manual contains information that is correct to the best of Audix Systems knowledge. It is intended to be a guide and should be used as such. It should not be considered as a sole source of technical instruction, replacing good technical judgement, since all possible situations cannot be anticipated. If there are any doubts as to exact installation, configuration and/or use,
call Audix Systems at+44 (0)1799 540888

ACKNOWLEDGEMENTS
All trademarks are recognised

2. Models Covered

This user manual covers the following equipment

- 570.800.800 MX/Audix Interface – 32 Channel MX Voice Alarm Interface

3. Technical Support

In the unlikely event of you having problems with your MX/Audix Interface please contact our Customer Services Department.

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4. Introduction

Product Aim:

The MX/Audix Interface allows transparent interface between MX and the Audix Alpha System Controller, with a reduced quantity of interconnection cables to minimise install costs.
The system allows a maximum of 16 Zones of Evacuation and Alert using the RBus interface.
Fault monitoring of the Voice Alarm system is via the addressable loop, and a fault tolerant backup Evac for all zones is also possible via the addressable loop.

Changes to the fire alarm cause and effect are simple, made using the MX configuration software, the changes are mirrored through to the Audix Voice Alarm.

System Operation:

Under alarm conditions:

An RBus message is sent from the MX Fire panel to the remote MPM800. This will switch the output of one of two XIOM boards mounted in the interface.

The XIOM outputs 1-8 are connected the Audix switch board D439RASSY
And outputs 9-16 are connected to D448RASSY

The switch boards translate the contact to serial data, which is transmitted to the Alpha. The configurations in the Alpha are pre programmed (see below) and play either the Evacuation or Alert message to a zone.

The configuration is such that if an Alert message is already playing in a zone, an Evacuate message in the same zone will override it. The message keeps playing until the RBus sends another message to stop it.

If a fault occurs with the RBus this is indicated in the MX panel and a fault warning will be displayed. If the unit loses power then this is indicated by the SIO800 module, which again warns the MX panel that there is a fault.

If there is a failure of the monitored data line between the interface and the Alpha, the Alpha shows a comms failure and indicates a system fault. This is in turn relayed back to the MX panel via common fault output.

The Incoming RBus data link is monitored; on failure of the RBus an indication is displayed on the front panel of the MX.

When any alarm (Evac or Alert) is activated via the RBus the MX panel also switches a RIM800 module (programmed at address 249). The output of this relay is monitored by a general purpose input on the MPM800 board. If the MX panel does not see this input change state within 20 seconds via the RBus then an automated Evacuate of all zones is initiated. Therefore in the event of failure of the RBus, total building Evacuation is possible under a fire condition.

In the event of total failure of the MX interface and/or the Alpha the fireman's microphone can be used in bypass mode to address all areas.

BS 5839 describes a requirement for 'the voice-alarm system to latch on receipt of a signal from the fire detection and alarm system until de-latched by a separate command from the fire detection and alarm system'. The MX/Audix Interface is a serial data linked interface for Audix PA VA systems that satisfies this requirement, with monitoring directly on to the fire detection and alarm system.

The output connections of the interface are linked to the serial 485-interface card. This connects the Alpha, which contains the emergency message cards.

The data link between the MX/Audix Interface and Alpha is continuously monitored and its failure is reported to the master FMS. This will be indicated as a "COM" Failure on the front panel of the Alpha and a "MISC" fault on the front panel of the FMS

Whenever the fire alarm contact activates the MX/Audix Interface will send data to the Alpha and trigger the emergency fire message.

Messages are stored as raw data files and not as simple tone generators, so any voice and/or alarm message can be recorded and stored on the message cards.

Priorities and routing of messages are pre-configured within the Alpha matrix

5. Cause and Effect

The MX/Audix Interface has the following pre determined Cause and Effect.
The Alpha Voice Alarm system is configured with priorities:
Zoned Evacuation 240
Zoned Alert 230
Backup Evacuate All 250

	Zone															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Evac Zone 1	✓															
Evac Zone 2		✓														
Evac Zone 3			✓													
Evac Zone 4				✓												
Evac Zone 5					✓											
Evac Zone 6						✓										
Evac Zone 7							✓									
Evac Zone 8								✓								
Evac Zone 9									✓							
Evac Zone 10										✓						
Evac Zone 11											✓					
Evac Zone 12												✓				
Evac Zone 13													✓			
Evac Zone 14														✓		
Evac Zone 15															✓	
Evac Zone 16																✓
Alert Zone 1	✓															
Alert Zone 2		✓														
Alert Zone 3			✓													
Alert Zone 4				✓												
Alert Zone 5					✓											
Alert Zone 6						✓										
Alert Zone 7							✓									
Alert Zone 8								✓								
Alert Zone 9									✓							
Alert Zone 10										✓						
Alert Zone 11											✓					
Alert Zone 12												✓				
Alert Zone 13													✓			
Alert Zone 14														✓		
Alert Zone 15															✓	
Alert Zone 16																✓
Backup Evac	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

6. MX Interface operational details

Definitions

The Unit MX/Audix Interface

Output A serial to parallel converter, which is transmitted by the serial link card D439 to the Alpha Voice Alarm system controller.

Alarm Input A monitored RBUS (RS 485) Serial Data connection from the fire detection and alarm system, used to activate the Audix Voice Alarm system

Fault Output This is monitored via the RS485 data by the Alpha comms connection.

Fault Indication Contact Input module is wire on to the fire loop and indicated availability of the Voice Alarm System

Important Safety Considerations

The MX/Audix Interface should be supplied from a fuse-protected 24V DC supply, the fuse rating should be 500mA L T.

The MX/Audix Interface and associated equipment must not be exposed to dripping or splashing.

Connections to Alarm Control System:

The unit will require the following connections to isolated contacts at the fire detection and alarm system.

1. One pair for RBus
2. Two pairs for addressable loop

Termination of site cables.

The MX/Audix Interface chassis is hard wired from the unit to the ITP100 a special termination panel fitted to a rail in the rear of the equipment rack. This panel is an Audix systems part and allows connection of site cables up to 2.5mm^2.
There are extra terminals and connector on the unit to accommodate the system fault outputs from an Audix Systems FMS system.
The terminal block arrangement is shown in a later section of this manual, for easy installation it is silk-screened on to the PCB just below the terminal blocks.

7. Commissioning Information

This document provides a commissioning engineer with a step by step programming guide to the installation of the MX/Audix interface. Via the MX Panel

The 2U MX/Audix Interface housing consists of the following equipment:

2 x XIOM800 module – part no: 557.180.016
1 x MPM800 module – part no: 557.202.012
1 x SIO800 module – part no: 555.800.063
1 x RIM800 module – part no: 568.800.003
1 x D439R PCB ASSY – part no: 570.006.008
1 x D448R PCB ASSY – part no: 570.006.009

Background: The purpose of the SIO800 module is twofold, firstly the input side of the module is connected to the global fault output of the Audix PA/VA system. Any fault occurring on the Audix equipment will result in a general fault being displayed on the MX panel. Secondly the output side of the module is connected to the Audix equipment to provide a global Evacuation of the building should both the following occur simultaneously:

a) There is a fault on the RBus and/or the MPM800
b) The MX panel is in a fire condition (Alert or Evacuation)

If condition (a) and (b) described above is in place then this will result in the Audix rack being configured to provide a global Evacuation message to all zones

The function of the XIOM modules is to provide 16 zonal Alert and 16 zonal Evacuate inputs into the Audix equipment.

Background to the MX/Audix Interface:

The purpose of this unit is to seamlessly integrate an MX addressable fire detection system and an Audix voice Evacuation system. The unit will be entirely pre-wired and addressed, making the installation and set up relatively straightforward and easy to carry out. The installation engineer has to carry out the following tasks:

1. Connect the addressable loop to the rear of the unit, marked L+, L- and R+, R-.
2. Connect the RS485 Remote Bus, to the rear of the unit, marked RBus +VE and RBus – VE.

Function and use of modules:

7.1.1 Single Input/Output Module (SIO800)

The input side of the module is connected to the global fault output of the Audix PA/VA system. This module provides full fault monitoring of the Audix VA rack. Any fault occurring

on the Audix equipment will result in a general fault (Audix general-purpose fault) being displayed on the MX panel.

Secondly the output side of the SIO800 module is connected to the Audix global Evacuation input. This will send a global Evacuation message to all floors of the building and it is intended that all persons will leave the building upon activation of this message.

The output side of the module will only operate should the following conditions be simultaneously present:

- The MX fire panel has detected an alert or evacuation alarm on one of its configured zones.
- There is a fault on the RBus and/or the MPM800.

7.1.2 Relay Interface Module (RIM 800)

This relay module is activated whenever a fire occurs on the MX panel (alert or evacuation). During the 20-second checking/testing period the RS485 Remote Bus and the MPM800 are checked for integrity. If these are found healthy, then the RIM800 is switched off, and no further fall-back action is taken.

Installation/Commissioning Procedure:

1. The MX addressable loop connections can be found at the rear of the 2U-interface housing. Connect the MX addressable loop, (L+, L- and R+, R-) as per the connections shown on the label. Check you have the polarity correct and check loop in and out for correct voltage (approx. 37.5V DC).

2. Connect the 2 wire remote bus (RS485, +VE and -VE), the connections can be found at the rear of the 2U interface housing, connections are shown on the label, check for correct polarity.

3. Note: the Single Input/Output Module (SIO800) within the housing has been pre-programmed its address is 250 (do not change the address).

4. Note: the Relay Interface Module (RIM800) within the housing has been pre-programmed its address is 249 (do not change the address).

5. Note: the Multi-Purpose Interface Module has been pre-configured via the binary dip-switches on the PCB, its address is number 15 (RB15)

6. In MX Consys open up UK Template (only version 5 or higher contain the Audix support in the UK Template).

7. Add a Group Control Action, Activate / NoAction, from Group 133 Fire Alarm Status to Group 465 Single Shot Fire Alarm (Audix). This is an essential connection that MUST be configured in order to get the emergency operation in the case of fault.

8. Within Points, select the correct loop (A-D) then program the single input/output module (SIO800) as address 250. Assign it to Group 464 Audix (SIO) Interface and to an appropriate zone.

9. Within Points, select the correct loop (A-D) then program the relay interface module (RIM 800) as address 249. Assign it to Group 462 Audix Path Check (RIM) OP and to an appropriate zone.

10. Within Regions select RB15 and set its unit name as a XBB and then set its Xbus template as ‘Audix 16’, this will automatically set up the two XIOM’s connected to the MPM800. This will assign all the alert outputs to group 459 and the evacuation outputs to group 460. Check they have been correctly assigned by checking within Point Region RBus 15/Xbus and then press F10 to confirm. Check that addresses 1-16 are assigned to the Audix Evac group 460, and that addresses 17-32 are assigned to the Audix alert group 459.

11. Within Point Region RBus 15, select Real Points, then select Real Point number 4, ensure that this general purpose input is assigned to group number 466 (Audix Alarm Ackn I/P)

12. The Audix/MX interface programming is now complete

13. Program the rest of the loop and ancillary functions as required

14. Download the appropriate MX firmware file.

15. Download the MX configuration file.

8. Procedure for replacing MX panel firmware and panel configuration

This procedure gives step by step instructions on how to replace both MX firmware and MX Configuration. It is useful when upgrading MX panel firmware or ensuring that both the panel firmware and configuration files are “clean” upon initial commissioning.

1. Make link H3 (top) on the CPU card.

2. Press and hold the red reset button on the CPU card until green watchdog led on the CPU card turns off momentarily. This will result in the panel beeping rapidly, in addition the “processor fault” led on the front cover will illuminate. (see note 1 below)

3. Press the red reset button S8 on the OCM (inside front cover). This will stop the rapid beeping and the processor fault led will go off. The panel will now beep at less regular intervals and after approximately 15 seconds the LCD display will go blank except for the message “ RS 485 Comms Error”.

4. With your download lead plugged into COM2 on the FIM , start a Firmware download from your
   Laptop by choosing “Transfer” and then “Firmware”. You will be presented with a choice box displaying the file “MX version *.*.dwn” (see note 2 below).

5. Highlight the file “MX version *.*.dwn” by clicking on it and the press the “open” button on the bottom right hand side. This will start the firmware download. The download will take approximately 5 minutes. During this time the panel will continue to beep slowly and will continue to display the message “RS 485 Comms error” on the LCD display.

6. While the firmware download is taking place make link H2 (bottom) on the CPU card.

7. On completion of the firmware download the laptop will display a message “ Remove Header link H3 to restart panel”.

8. As requested remove link H3 (top) on the CPU card and confirm you have done this by clicking OK.

9. The panel will once again start to beep rapidly and the “processor fault” led on the front cover will illuminate.

10. Press the red reset button S8 on the OCM (inside front cover). This will stop the rapid beeping and the “processor fault” led will go off. The panel will now beep at less regular intervals and will continue to display the message “ RS 485 Comms Error” on the LCD display.

11. With your download lead still plugged into COM2 on the FIM, start a configuration download from your laptop by choosing “Transfer” and then “Download Configuration”. By default this will be a full download, you will not get the option to simply download

modifications. You may also be asked if you wish to synch the panel time to the time on the laptop. If this happens say yes by clicking OK.

12. While the configuration download is in progress remove link H2 (bottom) on the CPU card.

13. On completion of the configuration download the laptop will ask if you wish to perform a panel restart. Say yes by clicking OK.. The laptop will inform you that the “panel restart request has been sent” click OK again. After a few seconds you will see the LCD display re-write and the panel start to initialise with your new firmware and configuration.

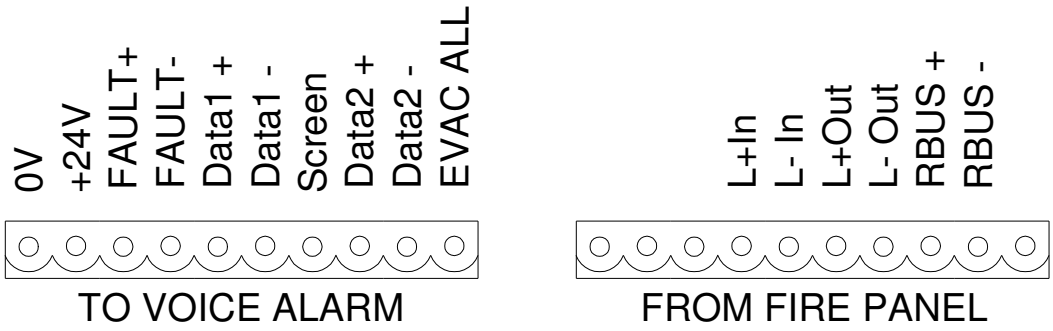
Note 1. Pressing the reset button on the CPU card momentarily down powers the processor. The processor will then read the link settings you have made when it is switches back on. Turning the panel off completely and then turning it back on has exactly the same effect. It may, in some instances, be preferable to use this method because you will re-initialise not only the CPU card but also the FIM.

Note 2. If the file presented in the choice box is incorrect. The correct dwn file can be found by selecting the following path on the choice box; C:\Program files\Tyco EPG\MX Consys v*.* .

Note 3 Prior to upgrading from ver1.* firmware to ver2.* firmware and later, ensure that the boot rom chip on the CPU card is version 1.2. (Version 1.1 boot ROM will work for the UK template but with some minor limitations. Please check prior to use)

9. Connections

2 off 10 way green Phoenix connectors are mounted on the rear of the unit. They provide field connections to both the Voice Alarm and the Fire Panel.



Terminations are 2.5mm dia max

Plug/Term.	Signal name	Description
PL1/1	0V	Power from Audix ITP100
PL1/2	+24V	Power From Audix ITP100
PL1/3	FAULT	System Fault wired for Audix FMS output
PL1/4	FAULT	System Fault wired for Audix FMS output
PL1/5	Data 1 +	Data 1 to Audix ITP100
PL1/6	Data 1 -	Data 1 to Audix ITP100
PL1/7	Screen	Connection For data cable Screen
PL1/8	Data 2 +	Data 2 to Audix ITP100
PL1/9	Data 2 -	Data 2 to Audix ITP100
PL1/10	EVAC ALL	Back up EVAC control output
PL2/1		
PL2/2		
PL2/3		
PL2/4	L+	Addressable Loop 1 (+)
PL2/5	L-	Addressable Loop 1 (-)
PL2/6	L+	Addressable Loop 2 (+)
PL2/7	L-	Addressable Loop 2 (-)
PL2/8	RBUS+	RBUS Monitored Serial Link to Fire Panel
PL2/9	RBUS-	RBUS Monitored Serial Link to Fire Panel
PL2/10		Connection For data cable screen

10. Specification

Evacuation Zones	16
Alert Zones	16
Primary Interface to Fire Panel	MX RBus (Monitored RS485)
Interface to Voice Alarm matrix	PMCV 16 Protocol. (Monitored RS485)
RBus Fault Indication	Via Addressable Loop (RIM800, Relay)
Fault Reporting	Via Addressable Loop (SIO800, Monitored Input)
Backup Evac All Zones	Via Addressable Loop (SIO800, Relay)
Power supply voltage required:	20 – 28V DC 24V DC recommended
Input Current (Max)	280mA from a 24V
Power supply protection fuse rating.	500mA L T
Power consumption:	7W max.
Dimensions (length, width, Height in mm)	19" Rack Width 2U High (89mm x 480mm x 370mm)

11. Table of Jumper links.

MBM800

Jumper	**Position**
JP1	Fitted
JP2	Fitted
JP3	Fitted
JP4	Fitted

MPM800 Switch Settings
SW1 Local
SW2 ON 1,2,3,4,5,6. OFF 6,7,8,9,10

XIOM1

Jumper	**Position**
H1	3-4
H2	3-4
H3	3-4
H4	3-4
LK1	Omit
U1 + U4	Open

U2 + U3	33 Ohm resistor pack fitted

XIOM2

Jumper	**Position**
H1	3-4
H2	3-4
H3	3-4
H4	3-4
LK1	Fitted
U1 + U4	Open
U2 + U3	33 Ohm resistor pack fitted

D439 1 & 2

Jumper	**Position**
LK1	Omit
LK2	2-3
LK3	1-2

All other PCB's have no user configurable links

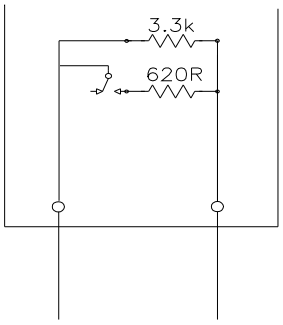
12. FMS output connections

The fault outputs of the FMS are located on the 9 pin D connector on the back of the master FMS Panel.

System fault pin out is as follows:

Normally Closed	Pin 7
Common	Pin 3
Normally Open	Pin 8

To monitor the Fault output of FMS is achieved by fitting monitoring resistors to the switch contact as indicated below.



\+ Fault -